

### **REMARKS/ARGUMENTS**

Claim 13 stands finally rejected by the Office Action of July 3, 2006. Claim 12 is cancelled. Claim 13 remains in the application.

In the office action of July 3, 2006, the examiner refers to applicants' arguments in applicants' amendment of May 1, 2006 with respect to the value of  $v$  over the claimed temperature range of above 50K to below the Curie temperature of the disordered alloy. The examiner states the applicants' arguments of May 1, 2006 have rebutted their arguments of December 16, 2005. The examiner's conclusion is respectfully traversed.

In the office action of September 28, 2005, the examiner had rejected claim 13 as being anticipated by the abstract and slides of the presentation given in February 2001. In response, applicants pointed out that the abstract and slides disclosed a value for  $v$  only at 50K, while claim 13 claimed a class of alloys comprising an alloy for each temperature in the range of above 50K to the Curie temperature of the disordered alloy. Therefore, applicants argued that the abstract and slides did not disclose such a class of alloys and therefore did not anticipate the claimed invention. Significantly, the abstract and slides did not disclose or even suggest that such a class of alloys existed.

In response to the arguments made in the amendment of December 16, 2005, the examiner then in the office action of February 28, 2006 rejected claim 13 under 35 USC 112, first paragraph. The examiner stated that there was no teaching in the specification as originally disclosed as to the value of  $v$  over the claimed temperature of above 50K and below the Curie temperature of the disordered alloy. The examiner concluded that the material was not described in the specification in such a way as to reasonably convey to one of ordinary skill in the art that the inventors at the time of

application had possession of the claimed invention. Applicants responded to this rejection in applicants' May 1, 2006 response by showing that, once the suggestion was made that the claimed class of alloys existed with enhanced parameters in the claimed temperature range, the calculation of  $v$  proceeded from the disclosure in the specification and from methods known in the prior art. The examiner states that based on applicants' argument one of ordinary skill would be able to determine the properties of the material having the claimed formula at any temperature between 0K and 373K simply by selecting a value of  $v$ . However, without applicants' suggestions in the specification, notably that such a class existed, there was no motivation for one of ordinary skill to employ the prior art methods to calculate the value of  $v$  in the claimed temperature range. The applicants' argument in the May 1, 2006 response was not that the prior art taught the claimed class of alloys but that the disclosure in the specification, in combination with methods known in the prior art, are sufficient to allow one of ordinary skill in the art to determine the properties of the claimed invention over the claimed temperature range. Therefore, applicants concluded that the inventors had possession of the claimed invention at the time the application was made. The arguments made in applicants' prior responses do not therefore rebut one another, but were made in rebuttal to specific rejections made by the examiner.

The examiner has noted that a complete reply to the final rejection should include cancellation of claim 12. Claim 12 is cancelled by the present amendment.

By the office action of July 3, 2006, the examiner has finally rejected claim 13 under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

In particular, the examiner states that the originally filed disclosure has no teaching as to how to make a lead scandium niobate having the claimed atomic structure and that the statement that this material could be formed by pulse laser deposition (PLD) or MBE (molecular beam epitaxy) does not provide enough information as to the conditions necessary to form the claimed alloy. The examiner also states that it is known in the art that the processing conditions must be controlled otherwise the claimed atomic crystal structure will not form. The examiner concludes that the claimed material was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

The examiner states that the Declaration under 37 CFR 1.132 filed May 5, 2006 is insufficient to overcome the rejection of claim 13 because the provided articles produce materials having a different atomic structure than the claimed atomic structure. The examiner further states that the provided articles produce materials having multilayered films where each film has a different distinct composition, that two of the articles teach materials having alternating barium titanate and strontium titanate films and that the third article teaches a material having alternating potassium niobate and potassium tantalate layers. The examiner argues that these differ from the claimed material in that none of the articles teach producing layers comprising both barium and strontium or niobium and tantalum, i.e., solid solutions. The examiner therefore concludes that the

articles do not show that one of ordinary skill in the art would have known at the time of the invention how to produce a material having the claimed atomic structure.

The examiner's rejection is respectfully traversed for the following reasons.

The attached Declaration under 37 CFR 1.132 of Laurent Bellaiche and attached Exhibits D and E show that it was well known at the time the present application was filed to grow thin films of solid solutions with differing compositions. Exhibit D (Mohammed, M. et al., Temperature dependence of conventional and effective pyroelectric coefficients for compositionally graded  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$  films, Journal of Applied Physics 84 (6), 3322-3325, 15 September 1998) discloses the preparation of ferroelectric thin films of  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$  with gradients in composition normal to the growth surface using metalorganic decomposition. Note Fig. 1. Exhibit E (Brazier, M. et al., Unconventional hysteresis behavior in compositionally graded  $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$  thin films, Applied Physics Letters, 72 (9), 1121-1123, 2 March 1998) discloses the preparation of thin film lead-zirconate –titanate (PZT) capacitors with composition gradients normal to the substrate using pulsed laser deposition. Note Fig. 1.

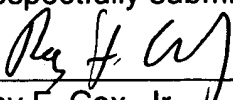
The Declaration of Laurent Bellaiche and the attached Exhibits D and E therefore show that one of ordinary skill in the art would have known at the time the present application was filed how to produce a material having layers of solid solution of differing composition as in the claimed atomic structure.

Accordingly, the applicants respectfully request that the rejection under 37 CFR 112, first paragraph, be withdrawn.

The applicant submits that with the amendments made herein and for the reasons given above, claim 13 is allowable. Timely issuance of a Notice of Allowance is respectfully requested.

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Respectfully submitted,

  
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